Background Information and Optional Management Strategies

Niagara District

Fisheries Management Plan

1986-2000

A Summary

Ontario

Ministry of Natural Resources

Hon. Vincent G. Kerrio
Minister

Mary Mogford
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Public Review

Please assist with the preparation of the Niagara District Fisheries Management Plan. You are encouraged to provide input by reviewing and commenting on this summary.

Please submit comments and the completed questionnaire by April 15, 1986 to the Niagara District Manager at the address shown below. Questions concerning the management planning process or open houses may be directed to Bob Lewies, District Biologist or, Dave Euler, Outdoor Recreation Supervisor.

Open houses will be held for anyone who wishes to discuss issues with staff from the Ministry or to review the background documents. We invite you to attend at the following locations:

March 17	1:30 - 9:30	Royal Canadian Legion 305 Queen St. Dunnville, Ontario
March 18	1:30 - 9:30	St. Catharines Public Library Mills Memorial Room 54 Church St. St. Catharines, Ontario
March 19 - 21	1:00 - 5:00 p.m.	O.M.N.R. Niagara District Office Hwy. 20 W. Fonthill, Ontario

Other times can be arranged to meet with clubs or other individuals as necessary.

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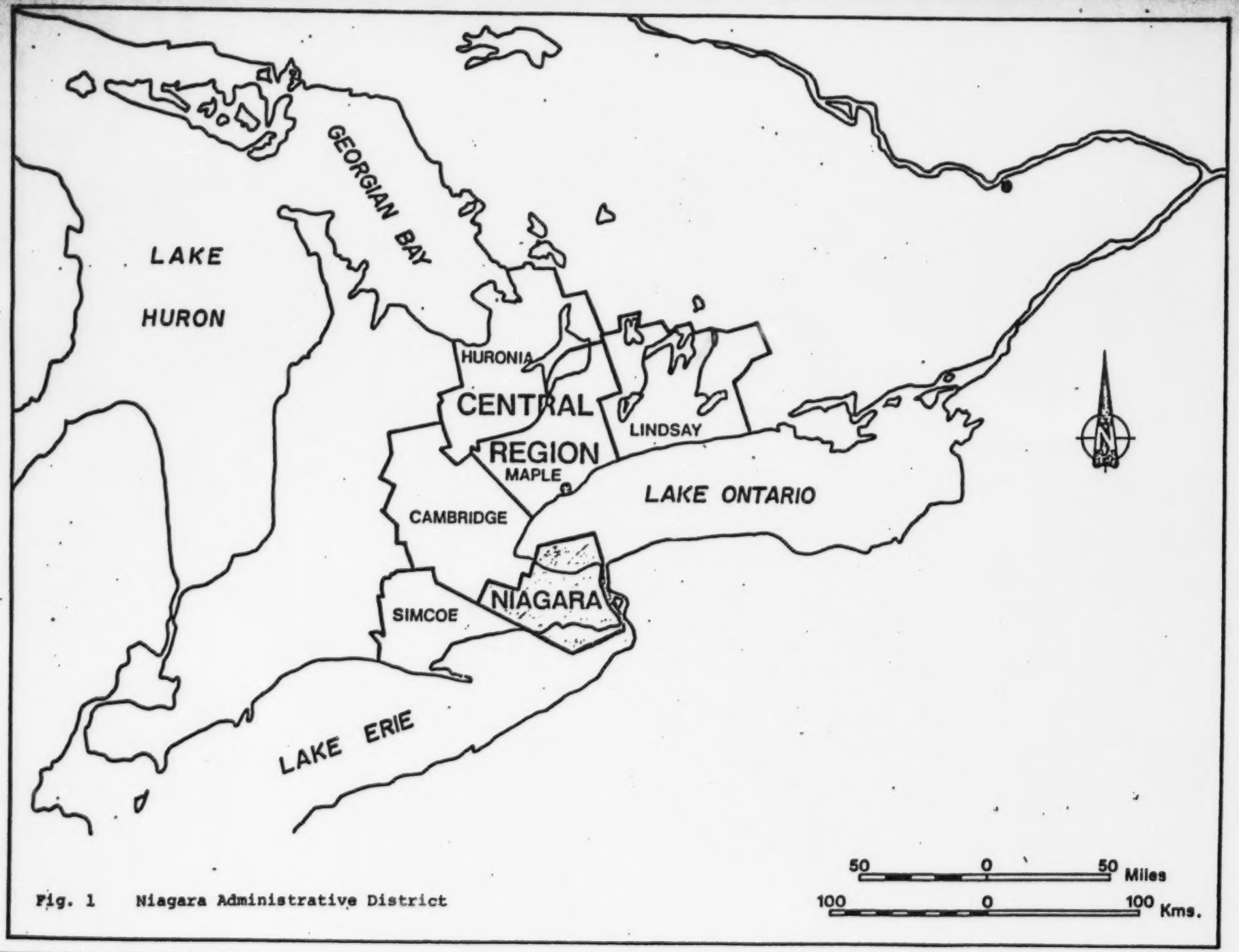

Fig. 1 Niagara Administrative District

INTRODUCTION

1. Purpose

This document has been prepared for purposes of public consultation and is a summary of relevant background information, issues and optional fisheries management strategies to be considered during development of the Niagara District Fisheries Management Plan. The Management Plan will provide long term direction for the fisheries management program, and it will help managers evaluate the response of fish populations to the management effort. This document summarizes a variety of information concerning the the fish resources in the Niagara District.

2. Planning Process

The Niagara District Land Use Guidelines (DLUG) established long term goals and general management direction for resources in the District. The Fisheries Management Plan will identify how the fisheries resource will be managed in order to achieve the goals established for the fisheries resource.

Public involvement is encouraged throughout the planning process. Open houses will be held to explain the fisheries planning process and background information. These meetings will provide an opportunity to discuss issues and optional management strategies. A draft management plan will then be prepared and a second public meeting will be held to review the draft plan. The final plan will be completed by July 31, 1986.

The goal of fishery management in Niagara is to protect, rehabilitate, enhance and maintain Ontario's fish communities and their environment to provide optimum contributions of fish, fishing opportunities, and associated benefits to society.

3. Detailed Background Report

Several reports are available for review at the Niagara District office. They include reports and background documents which explain the contents of this summary in more detail.

BACKGROUND INFORMATION

1. The Resource

a. Physiography

The Niagara Administrative District encompasses the entire

Regional Municipality of Niagara and the eastern portion of the Regional Municipality of Haldimand-Norfolk. Bounded on the south by Lake Erie, on the east by the Niagara River and on the north by Lake Ontario, Niagara District has a land area of 273,400 hectares and a water area of 140,200 ha, of which all but 4,300 ha are boundary waters (Fig. 1).

The topography, soils and climate of Niagara District have significant influences on the fishery resource. The relatively flat land produces meandering, slow moving streams and rivers. Heavy clay soils in the south of the district contribute high amounts of particles which remain suspended in the water. High turbidity restrict these waters to fish species which can tolerate these conditions. In the north part of the district the soil is more sandy, but the gentle slope of the land causes the streams to be slow moving and warm. The exception is the waters of Twelve Mile Creek which flow from the Fonthill Kame. Springs in this area provide the only cold water stream in the district.

There is a lack of stability in stream banks, particularly in the Iroquois plain area, which causes serious erosion and subsequent degradation of fish habitat. High intensity agricultural use also contributes contaminants by improper or careless use of pesticides, herbicides and fertilizers.

b. Allowable Yield and Partitioning Among Species

Allowable fish yields for Niagara District were developed using local data, and incorporate sport, commercial and baitfish components. District waters have been partitioned into five strata -- Lake Erie, Lake Ontario, Niagara River, Grand River, and Other Inland Waters (Table 1).

(i) Lake Erie

Niagara District has jurisdiction over 57,400 ha of Lake Erie. The Ontario Fish Yield Estimates (1979) determined the Lake Erie average potential yield as 11.13 kg/ha/yr, however the productivity of the eastern basin is known to be much lower than the western basin, and the estimated allowable annual yield from the Niagara waters of Lake Erie is 4.30 kg/ha/yr for a total of 246,600 kg.

Partitioning the fish yield to species indicates a warm water lake dominated by yellow perch, smallmouth bass, rainbow smelt and white bass. Shift in species composition may be expected, particularly with respect to yellow pickerel, which seem to be increasing in numbers.

(ii) Lake Ontario

Estimated allowable yield from Niagara District waters (76,000 ha) of Lake Ontario is 0.33 kg/ha/yr for a total of 25,200 kg/yr. While species such as smelt, yellow perch and white bass still contribute significantly to the Lake Ontario community, coho salmon, rainbow trout and chinook also occupy dominant positions and collectively represent approximately 25% of the current harvest. The Lake Ontario fish community is also dynamic, due to massive infusions of salmon and trout for the major put and delayed take fishery, and to stocking of lake trout for rehabilitation purposes. Lake Trout are desirable because they can provide a native, self sustaining salmonid population. Their re-establishment is believed to now be possible becuase of the success of sea lamprey control.

(iii) Niagara River

Ontario waters of the Niagara River cover 2,530 ha. Estimated allowable annual yield is 159,800 kg, or 63,2 kg/ha/yr. Over 70% of this yield is comprised of baitfish, mainly emerald shiners taken in the upper Niagara River. The upper river is dominated by warm water species, while the lower river is dominated by salmonids.

(iv) Grand River

One thousand six hundred and thirty four hectares of the Grand River lies within Niagara District. The estimated allowable annual yield is 54,100 kg, or 33.1 kg/ha/yr. Baitfish form the major component of this figure. Carp, channel catfish, sheephead and bullhead dominate the higher trophic levels.

(v) Other Inland Waters

In addition to the areas described above there are a total of 2,666 ha of water in ponds, quarries, inland lakes and reservoirs, one cold water stream and several warm water streams. Collectively these waters have an estimated annual allowable yield of 48,100 kg. Baitfish dominates the community, followed by warm water coarse fish and panfish.

(vi) Summary

Niagara District has a total water area of approximately 140,200 ha, and a total allowable annual yield of 533,200 kg (Table 1). Current commercial harvest of some species has now been limited by quota management.

c. Significant Fish Species

Five fish species considered locally rare or provincially significant occur in the district. A remnant population of Lake Sturgeon is found in Lake Erie. Dr. Ed Crossman of R.O.M. indicates the presence of redfin pickerel in the tributary streams of the Niagara River, and the Twelve Mile Creek population of brook trout is the only known remaining natural population in the Niagara District. Maskinonge are mainly restricted to the Niagara River. Green sunfish may occur in the Grand River watershed and other inland waters.

2. Current Resource Use

a) Sport Fishing

The population of the Niagara District was 393,643 in 1982. Current angling use and harvest figures indicate Niagara District offers a rich diversity of fishing opportunities, utilized mainly by local residents (Table 2 & 3). Sport fishing amounts to 732,900 angler hours in 179,600 fishing occasions. A sport fishing occasion can be defined alternatively as an angler trip and is the length of time that an angler will spend fishing out on the water before returning to shore for any reason. Harvest estimates indicate annual landings for spring and summer of 95,500 kg (210,000 lbs). Extrapolation suggests a further 31,300 kg (68,800 lbs) in the balance of the year, for a total annual harvest by sport anglers of 126,800 kg (279,000 lbs). Over 30 different species are taken, but the catch is dominated by smallmouth bass, sheephead, yellow perch, rock bass, crappie, bullhead, white bass, rainbow trout, common carp and coho salmon (Table 2).

(i) Lake Erie

Anglers annually expend 290,000 hours (63,000 occasions) fishing in Niagara District waters of Lake Erie. Seventy six percent are local residents, 8% from other parts of Ontario, and 16% non-resident. They take approximately 49,600 kg of fish, dominated by smallmouth bass (45.6% of the total).

(ii) Lake Ontario

Anglers expend 84,000 hours in 18,000 occasions annually fishing in Lake Ontario waters of Niagara District. Seventy four percent are local residents, 20% are from other parts of Ontario and 5% non residents. Coho salmon account for 30% of the 8400 kg annual harvest and rainbow trout, chinook salmon, white bass and brown trout are also important species.

(iii) Niagara River

One hundred ninety three thousand hours in 54,000 occasions are expended by anglers in the Niagara River. Just over half are local residents while 35% are non-residents. Smallmouth bass, with over 30% of landed weight, dominate the catch. The upper (south) part of the river is basically a warm water fishery with smallmouth bass the main target species, while the lower (north) part of the river is a cold water fishery, with trout and salmon the desired species.

(iv) Grand River

Anglers expend 106,000 hours in 29,000 occasions fishing the Niagara District waters of the Grand River, primarily interested in yellow pickerel, smallmouth bass, and common carp. Only carp occurs in high consistency in the catch, and it dominates the harvest, giving 27% of the 14,300 kg harvest.

(v) Other Inland Waters

Over 54,000 hours of fishing in 14,000 occasions are spend fishing in other Niagara District waters. Bullhead supply 40% of the 16,500 kg harvest, although smallmouth bass yellow perch and carp are the target species.

b. Commercial Fishing

The majority of commercial food fish operations occur on Lake Erie, with minor contributions from Lake Ontario and the Grand River. In 1985 there were 13 commercial fish licences on Lake Erie, 4 in Lake Ontario and 9 in the Grand River for a district total of 26. Collectively they harvested 124,500 kg, with yellow perch dominating the catch at 39% of the total (Table 1).

(i) Lake Erie

Commercial fishermen licenced to fish Niagara District waters may also go as far west as the Kent/Elgin boundary. The statistical reporting zone showed a harvest of 1,628,000 kg taken by Niagara District fishermen, however, only 92,500 kg of this is estimated to have come from Niagara District waters. Yellow perch, yielding 50% of the total, dominate the Lake Erie catch (Table 4).

(ii) Lake Ontario

Rainbow smelt contribute nearly 70% of the 16,500 kg per year harvested commercial in Lake Ontario. Yellow perch, white bass and white perch also contribute to the catch (Table 4).

(iii) Grand River

Channel catfish and common carp dominate the 15,400 kg per year harvest in the Grand River, at 30% each. This is an important local fishery, with part of the catch being smoked and sold locally. In 1981, 17,400 kg of fish brought in $17,500.

There is presently no commercial fishery on the Niagara River or on other inland waters. Although reported harvest ceased in 1964 records indicate there were commercial licences on the Niagara River as late as 1975.

c. Commercial Bait Fishing

In 1984, 17 people held a total of 68 licence to harvest bait in Niagara District. The district is divided into 7 licence units and one person may be licenced, and fish, in several units. 16 people also had licences to deal in baitfish and to preserve baitfish, and 17 non-residents were licenced to export baitfish out of the province.

The Niagara District baitfish industry represents a significant part of our fishery (Table 5). The current average harvest is over 144,000 kg (4.42×10^6 dozen) per year. During the peak year of 1981 a harvest of over 8.1×10^6 dozen baitfish represented 55.8 percent of the provincial harvest and 80.7 percent of the regional harvest. The Niagara River is the major bait producing water in the district.

3. Projected Use

a. Sport Fishermen

Sport fishing projected use to 2000 is based on an expected population growth of 2.9% and a 15% increase in non-local resident and non-resident participation. By the year 2000 recreational angling is expected to harvest 136,000 kg of fish in 193,100 angler occasions per year (Table 2).

b. Commercial Fishermen

Expansion of the commercial fishery to 2000 will be limited by quota allocation. As in the case of estimating the total catch, only a 15% portion of the quota allocation for the eastern division of Lake Erie was projected as being caught in Niagara District waters, and only a 1% portion of the rainbow smelt catch was forecast as coming from here (Table 4).

c. Bait Fishermen

Since baitfish demand in Niagara is dictated by the export market, and since trend figures are not available, projected use to the year 2000 is assumed to be at the present level (Table 5).

4. Target Testing

Targets established for the district by the year 2000 were developed and contained in the Niagara District Land Use Guidelines (1983). The annual yield required to meet these guidelines exceeds the estimated resource base potential, and therefore must be modified. The projected use, however, falls below the estimated resource base potential for the district, although individual location or species may be stressed by excessive harvests (Table 6). Lake Ontario may exceed its resource base potential with an increase above current harvest levels (Table 1). Harvest on the Grand River may have reached or slightly surpassed its production capability. On the Niagara River the excess of use over potential is mainly confined to baitfish. For Lake Erie and "Other Inland Waters" the resource base potential exceeds the projected use to a significant degree.

5. Problems and Issues

a. Niagara District

(i) Problems relating to the long term stability of a desirable fish community at a level consistent with the productive cabability of the resource base. To a user this may mean having his personal preference of fish species, while to an ecologist it may be one where the species are in harmony with their environment, and relative numbers and biomass. Ideally a combination of these would produce a community where the fish species present are in close harmony with their environment and management has been used to modify the community to favour specific species desired by the user. Management commences with inventory of the resource, the environment, and the stresses influencing them. Assessment then leads to management decisions and activities. Many factors act singly or in combination to

influence the success of management decisions and activities. Among them are; conflicting desires of user groups, lack of control of factors affecting habitat (land use practices, waste management, drainage practices), incomplete inventory and assessment, and lack of adequate technology to mitigate many forms of environmental impact.

(ii) Problems relating to the supply of desired fish species in sufficient quantity and quality and by the desired methods. Current harvests in Niagara District appear to be within the capability of the fisheries to maintain themselves. Quality could be improved through supply of more fish of the desired species and by reducing contaminant levels in fish flesh. Where there is high participation by both sport fishermen and commercial operators there is a perceived problem with supply. Improved access to fisheries could increase total return, but should be directed to areas most able to accept increased demand. Managers face a quandry when demand outstrips supply. It is currently unclear if productivity can be successfully increased, yet management directed at anything but increased productivity leads to user dissatisfaction. Current methods of improving returns by constructing fishing piers or establishing artificial reefs may appear to increase the fishery, but may only concentrate it. Increasing productivity through nutrient enrichment may favour the less desirable species and result in a decline in fishing quality and finally lead to a decline in total fish productivity.

(iii) Problems relating to the required level of management at a fiscal and social cost that society can afford and is willing to pay. The current Niagara District fisheries budget of $125,000 to $130,000 is barely adequate for the work load required. The cost of adequate management could easily be 1 1/2 to 2 times the current budget and by 2000 could be as much as 5 times. Social costs must also be paid as we change from a "laisez-faire" to a controlled approach to fisheries. Commercial fishermen are already limited by quotas and in many places the number of bait fishery licences is limited. Sport fishermen are restricted by catch limits, size limits and closed seasons. All these actions restrict individual rights and freedoms. The public must be willing to pay this price or the required fisheries management cannot occur.

b. Lake Ontario

Current harvest is now equivalent to the estimated allowable harvest (Table 1). The desirable fish community is being maintained by extensive stocking of salmon and trout. The demand for salmon is increasing the demand for improved access. Based on current information, managers may need to direct fishing pressure elsewhere. Contaminants in the fish reduce the quality of fish as food.

c. Lake Erie

Harvest is estimated to be well below the allowable level (Table 1). Yellow pickerel populations need to be improved to meet angling demand but this may be occurring naturally. A user conflict between sport and commercial fishing for yellow perch and yellow pickerel is perceived by sport fishermen but is not supported by our data. More information is required about the winter and early spring sport fishery. Habitat may limit the production of northern pike and yellow pickerel, and the dam at Dunnville may be restricting access to potential pickerel spawning areas in the Grand River.

d. Niagara River

The Niagara River is really two fisheries. The lower river shares the problems of Lake Ontario, the upper river those of Lake Erie. Most of the Niagara River surplus allowable harvest is expressed as baitfish. Too little is known to predict if unharvested baitfish potential can be harvested as other species.

e. Grand River

Current harvest is below the estimated allowable harvest, but preferred species make up only a small portion of the catch. Sedimentation rates are high and have a negative impact on fish production.

f. Other Inland Waters

Collectively these waters contribute approximately 8% of the overall fish harvest. Again preferred species are poorly represented in the catch. Special local problems exist, such as a dam at the mouth of Twelve Mile Creek which restricts fish access from Lake Ontario and primary use of reservoirs for water supply, power generation and lock operation limiting use for fishing.

g. Special Cases

(i) Baitfish

The amount of baitfish taken by individuals for personal use is unknown. This undocumented harvest could be large.

(ii) Rare or Endangered Species

Several fish species are known to occur in low numbers in the district and may be considered at least of local significance. Included in this list are brook trout, maskinonge, lake sturgeon, redfin pickerel and green runfish.

OPTIONAL MANAGEMENT STRATEGIES

1. Introduction

Optional targets for fishery production and harvest by user group are established and listed in Table 7. Critical to the achievement of those targets are management strategies and tactics.

Strategies are planned actions to achieve a desired end, while tactics are specific management projects carried out to implement the strategy.

Strategies dealing with inventory and assessment of the components and harvest of the fishery are not optional, but necessary elements of the plan.

In the following sections optional strategies are identified as they apply to assigned targets and to the problems and issues discussed in the Niagara District Fisheries Management Plan background information.

2. Problems, Strategies and Tactics

a. Niagara District

Meeting current targets (Niagara District Land Use Guidelines, Table 7) requires a total harvest of 647,700 kg/yr by the year 2000. The resource base potential is estimated to be 533,200 kg/yr indicating a clear need for adjustment. Current level of sportfishing harvest is 0.72 kg per fishing occasion, and it is desirable to maintain this success rate, if possible.

Problem: Target achievement by year 2000.

Option 1: Reduce current targets for the year 2000 to the estimated demand level (Table 7) giving a total harvest of 415,500 kg/yr and leaving 117,700 kg as a reserve. The new targets would be 193,100 angler occasions per year at 0.70 kg/occ., 135,400 kg/yr of commercial fish and 4.42×10^6 dozens of bait fish/year.

The tactics required to meet these targets will be dictated by site specific problems discussed later.

Option 2: Reduce the current targets for sport and commercial fishing to the limits of the resource base potential for non bait fish species. This option would provide for a total harvest of 505,400 kg/yr and leave 27,800 kg/yr reserve (Table 7). The sportfish

target of 168,400 kg/yr could be realized as 326,000 occasions if the harvest per occasion dropped to 0.52 kg but only 233,900 occasions if the present level of 0.72 kg is to be maintained.

This option includes increasing the current projected use by both the sport and commercial fishermen. Sportfishing may be increased by improved access to fishing areas, by media promotion and by managing the fisheries for preferred species. Commercial fishing activity can be stimulated by increasing the number of licences, increasing quotas, increasing the number of licenced areas or by developing markets for currently less desirable species.

Option 3: Establish targets at the limits dictated by the resource base. Sport and commercial harvest targets would be the same as in option 2 and require the same tactics. The baitfish harvest target would be increased to 5.27 x 10 dozen per year (171,800 kg) and there would be no reserve.

(Baitfish) Baitfish harvest could be stimulated by increasing the number of licences, increasing exports, giving more liberal possession limits to anglers or by increasing access to the major baitfishing areas.

Comment re Options 2 and 3. It may be difficult to arrive at an optimum combination of angler occasions and success (kg/occ.). Conflicts within and between user groups may increase with increasing use of the resource.

b. Lake Ontario

Factors influencing the development of management options.

There are provincial commitments for rehabilitating lake trout, (150,000 - 250,000 stocked annually, supplying an alternative salmonid fishery in the meantime (50,000 brown trout 150,000 chinook salmon and 50,000 - 70,000 coho salmon stocked annually) and maintaining a viable commercial fishing industry. The district has a quota allocation to the commercial fishery of 4500 kg of yellow perch and 800 kg of bullheads per year. The current total harvest (1984) strains the allowable harvest limit of 25,200 kg/yr. Maintaining 0.45 kg per angling occasion is also desired. Lake Ontario anglers desire a continuation of the coho, chinook, rainbow trout and brown trout fisheries that have been provided by put and delayed take fish stocking programs.

Problem: Limiting the harvest to the 1984 estimated harvest level.

Option 1: Remove the licence and quotas of inactive commercial fishermen.

Comment: This option would have limited effect on the current demand for fish but would prevent expansion of the fishery through transfer of inactive licences.

Problem: Suggestion that salmonid stocking rates may be excessive as evidenced by returns to anglers estimated at 58,000 kg (mostly from Niagara District waters) during 1985 St. Catharines Salmon Derby (Draft, Western Lake Ontario Creel Surveys - 1985, L.O.F.A.U., Jan. 1986).

Option 1: Maintain stocking levels and monitor community response.

Option 2: Reduce stocking rates to a level sufficient for lake trout rehabilitation and to supply anglers with a salmonid harvest at a level within the annual allowable harvest limit.

Comment: Since these fish rove the entire lake they utilize production capability across district boundaries, therefore cross lake agreement on stocking levels would be required.

Option 3: Encourage catch and release sportfishing (with possible exception of chinook and coho) through angler education about need to limit harvest and by establishing stricter catch and size limits (again possible exception as noted above).

Option 4: Redirect angling pressure to areas with an estimated surplus fish production such as Lake Erie.

Problem

c. Lake Erie

Factors influencing the development of management options.

Without managing the fishery to stimulate demand, only 60 percent of its resource base potential of 246,600 kg per year will be realized while other fisheries in the district will be near or above their potential. It is desirable to maintain an angler success rate of 0.79 kg/occ.

There is a provincial commitment for maintaining a

viable commercial fishery and the district contribution to the quota assigned to Niagara District commercial fishermen is estimated as 38,500 kg of yellow perch, 18,300 kg of white bass, 9,800 kg of rainbow smelt and 5,900 kg of yellow pickerel per year.

Problem: Encouraging fuller utilization of the resource base to meet assigned district targets.

Option 1: Increase use of the resource by providing more access, by encouraging marina, boat launch and fishing pier construction by public and private agencies.

Option 2: Construct artificial reefs to concentrate fish.

Option 3: Promote use of less preferred fish species.

Option 4: Encourage outdoor and sportfishing writers to promote excellence of the fishery.

Option 5: Manage the fishery to maintain or enhance preferred fish species populations by protecting smallmouth bass spawning areas from continued landfill or other shoreline alterations, improving access for fish migration in the Grand River using fish ladders, fish lifts or dam removal, improving access for northern pike to Eagle Marsh and by co-operating with New York State in their efforts to rehabilitate lake trout.

Problem: User conflict between sport and commercial fishermen.

Option 1 Educates user groups to appreciate the extent of the resource available in Lake Erie.

Option 2 Physically separate the user groups by lake zoning.

d. Niagara River

Factors influencing the development of management options.

It is desirable to maintain an angler success rate of 0.70 kg/occ. and a harvest at or below the resource base potential of 159,800 kg/yr. Increasing sportfish demands may use up the resource base of non baitfish and create a decrease in angler success per occasion.

Options for sportfish management must be directed toward limiting demand as per Lake Ontario.

Problem: User conflict amoung bait fishermen.

Option 1: Assign fishing zones along the river.

Option 2: Assign quotas to each bait fisherman.

Option 3: Encourage bait fishermen to resolve their differences and to share the resource equitably amoung themselves.

e. Grand River

Factors influencing the development of management options.

The province has a commitment to maintain a viable commercial fishery. Quotas assigned to Grand River commercial fishermen total 9,100 kg of carp, 7,600 kg of bullheads, 6,200 kg of channel catfish and 400 kg of sunfish per year. It is desirable to maintain the current angler success rate of 0.48 kg/occ. Anglers show a preference for yellow pickerel and smallmouth bass, yet these species represent only 4.7 percent of the sportfish harvest and 1.5 percent of the total harvest. Projected demand for fish by the year 2000 is in excess of the resource base potential.

Problem: Limiting harvest to a level at or below the resource base potential of 54,100 kg/yr.

Options: As per Lake Ontario

Problem: Insufficient yellow pickerel and smallmouth bass to satisfy angler desire for these species.

Option 1 Identify, improve and protect smallmouth bass spawning areas.

Option 2 Improve access for fish migration in the Grand River using fish ladders, fish lifts or dam removal.

Option 3 Encourage habitat improvement by reducing silt loading by promotion of soil conservation programs of the Ontario Ministry of Agriculture and Food and local conservation authorities.

Option 4 Encourage improvement of water quality by supporting the Ontario Ministry of the Environment's clean water programs.

Option 5 Support reforestation efforts particularly along river and stream banks.

f. Other Inland Waters

Factors influencing the development options.

There is a limited amount of site specific information and a diverse assortment of fisheries and habitats in this area. With a few specific exceptions (such as Twelve Mile creek cold water habitat) this area has the lowest district priority. The primary purpose of most significant reservoirs in this area is for power generation, potable water supply or transportation. The district resources are insufficient to manage this area on anything but an opportunistic "ad hoc" basis. It is desirable to maintain the harvest at or below the resource base potential of 48,100 kg/yr with a success rate of 1.16 kg/angling occasion. The majority of users prefer smallmouth bass and yellow perch which collectively account for only 5.7 percent of the sportfish harvest and 3.0 percent of the total harvest.

Problem: Insufficient smallmouth bass and yellow perch to satisfy angler desires.

Option 1 Encourage habitat improvement by reducing silt loading as per Grand River.

Option 2 Support reforestation efforts particularly along river and stream banks.

TABLE 1 PROJECTED USE OF FISHERIES RESOURCES AND RESOURCE BASE POTENTIAL (Partitioned by species or species group) NIAGARA DISTRICT, YEAR 2000

LOCATION	SPECIES	SPORTFISH KG/YR	COMMERCIAL KG/YR	BAITFISH KG/YR	TOTAL KG/YR	RESOURCE BASE POTENTIAL KG/YR
Niagara District	Baitfish			144,000	144,000	171,800
	Yellow Perch	12,700	43,000		55,800	96,300
	Smallmouth Bass	37,400			37,400	51,300
	Rainbow Smelt	100	21,200		21,300	35,300
	White Bass	8,800	19,400		28,200	30,700
	Sheephead	16,000	1,500		17,500	24,200
	Rock Bass & Crappie	11,300	700		12,000	16,800
	Bullhead	10,100	8,400		18,500	15,600
	Common Carp	5,800	9,100		14,900	12,500
	Yellow Pickerel	2,800	5,900		8,700	9,100
	Channel Catfish	2,200	6,300		8,500	8,400
	Rainbow Trout	8,200			8,200	8,200
	Sucker Species	3,900	1,000		4,900	6,200
	Coho Salmon	5,400			5,400	6,000
	Lake Trout	3,300			3,300	4,400
	White Perch	200	2,900		3,100	3,800
	Northern Pike	1,600			1,600	1,600
	Muskellunge	1,800			1,800	2,000
	Brown Trout	1,600			1,600	1,600
	Chinook Salmon	1,500			1,500	1,400
	Sunfish	600	400		1,000	600
	All Other Species	800	15,500		16,300	25,100
	TOTAL	136,100	135,400	144,000	415,500	533,200
Lake Ontario	Baitfish			200	200	200
	Yellow Perch	400	4,500		4,900	3,000
	Rainbow Smelt		11,400		11,400	11,400
	White Bass	700	1,000		1,700	1,600

..... Cont'd.

TABLE 1 Cont'd.

LOCATION	SPECIES	SPORTFISH KG/YR	COMMERCIAL KG/YR	BAITFISH KG/YR	TOTAL KG/YR	RESOURCE BASE POTENTIAL KG/YR
Lake Ontario Cont'd.	Sheephead	300	100		400	300
	Bullhead	400	800		1,200	400
	Yellow Pickerel	200			200	200
	Rainbow Trout	1,600			1,600	1,500
	Coho Salmon	2,800			2,800	2,700
	Lake Trout	100			100	300
	White Perch		500		500	500
	Brown Trout	500			500	500
	Chinook Salmon	1,500			1,500	1,400
	All Other Species	400	800		1,200	1,200
	TOTAL	8,900	19,100	200	28,200	25,200
Lake Erie	Baitfish			7,600	7,600	12,600
	Yellow Perch	7,800	38,500		46,300	88,300
	Smallmouth Bass	24,000			24,000	37,200
	Rainbow Smelt		9,800		9,800	23,700
	White Bass	1,500	18,300		19,800	22,200
	Sheephead	8,500	900		9,400	14,500
	Rock Bass & Crappie	5,100	500		5,600	8,600
	Bullhead	700			700	1,000
	Common Carp	600	100		700	1,200
	Yellow Pickerel	2,200	5,900		8,100	8,400
	Lake Trout					700
	White Perch		800		800	1,200
	Northern Pike	1,600			1,600	2,500
	All Other Species	700	14,200		14,900	24,500
	TOTAL	52,700	89,000	7,600	149,300	246,600

..... Cont'd.

TABLE 1 Cont'd.

LOCATION	SPECIES	SPORTFISH KG/YR	COMMERCIAL KG/YR	BAITFISH KG/YR	TOTAL KG/YR	RESOURCE BASE POTENTIAL KG/YR
Niagara River	Baitfish			105,900	105,900	117,600
	Yellow Perch	4,000			4,000	4,000
	Smallmouth Bass	12,500			12,500	12,800
	White Bass	5,000			5,000	5,100
	Sheephead	2,000			2,000	2,100
	Rock Bass & Crappie	1,400			1,400	1,400
	Rainbow Trout	6,600			6,600	6,700
	Coho Salmon	2,600			2,600	2,600
	Lake Trout	3,200			3,200	3,400
	Muskellunge	1,700			1,700	1,800
	Brown Trout	1,100			1,100	1,100
	All Other Species	1,200			1,200	1,400
	TOTAL	41,300		105,900	147,200	159,800
Grand River	Baitfish			15,000	15,000	18,200
	White Bass	1,400	100		1,500	1,600
	Sheephead	4,200	500		4,700	5,300
	Bullhead	1,800	7,600		9,400	3,900
	Common Carp	4,200	9,100		13,300	10,100
	Channel Catfish	1,700	6,200		7,900	7,500
	Sucker Species	500	400		900	1,000
	White Perch		1,600		1,600	1,900
	All Other Species	1,900	1,800		3,700	4,600
	TOTAL	15,700	27,300	15,000	58,000	54,100

..... Cont'd.

TABLE 1 Cont'd.

LOCATION	SPECIES	SPORTFISH KG/YR	COMMERCIAL KG/YR	BAITFISH KG/YR	TOTAL KG/YR	RESOURCE BASE POTENTIAL KG/YR
Other Inland Waters	Baitfish			15,400	15,400	23,200
	Yellow Perch	400			400	600
	Smallmouth Bass	600			600	900
	Sheephead	1,000			1,000	1,400
	Rock Bass & Crappie	4,100			4,100	5,800
	Bullhead	7,100			7,100	10,100
	Common Carp	700			700	900
	Sucker Species	2,500			2,500	3,500
	Channel Catfish	500			500	700
	All Other Species	600			600	900
	TOTAL	17,500		15,400	32,900	48,100

TABLE 2 CURRENT AND PROJECTED ANNUAL SPORT FISH HARVEST
NIAGARA DISTRICT WATERS

LOCATION	SPECIES	CURRENT WEIGHT HARVESTED (KG/YR)	% OF TOTAL	PROJECTED WEIGHT HARVESTED KG 2000
Lake Erie	Smallmouth Bass	22,600	45.6	24,000
	Sheepshead	8,000	16.1	8,500
	Yellow Perch	7,400	14.9	7,800
	Rock Bass & Crappie	4,800	9.7	5,100
	Yellow Pickerel	2,100	4.2	2,200
	All Other Species	4,700	9.5	4,900
	TOTAL	49,600		52,700
Lake Ontario				
	Coho Salmon	2,700	31.6	2,800
	Rainbow Trout	1,500	18.0	1,600
	Chinook Salmon	1,400	16.3	1,500
	White Bass	700	8.3	700
	Brown Trout	500	5.6	500
	All Other Species	1,700	20.2	1,800
	TOTAL	8,400		8,900
Niagara River				
	Smallmouth Bass	11,500	30.4	12,500
	Rainbow Trout	6,100	16.1	6,600
	White Bass	4,600	12.1	5,000
	Yellow Perch	3,600	9.6	4,000
	Lake Trout	3,000	7.8	3,200
	All Other Species	9,100	24.0	10,000
	TOTAL	38,000		41,300
Grand River				
	Common Carp	3,800	27.0	4,200
	Sheepshead	3,800	27.0	4,200
	Bullhead	1,600	11.5	1,800
	Catfish	1,500	10.8	1,700
	White Bass	1,300	8.8	1,400
	All Other Species	2,200	15.0	2,300
	TOTAL	14,300		15,700

TABLE 2 Cont'd.

LOCATION	SPECIES	CURRENT WEIGHT HARVESTED (KG/YR)	% OF TOTAL	PROJECTED WEIGHT HARVESTED KG 2000
Other Inland Waters				
	Bullhead	6,700	40.8	7,100
	Rock Bass & Crappie	3,800	23.2	4,100
	Suckers	2,300	14.0	2,500
	Sheephead	900	5.6	1,000
	Common Carp	600	3.8	700
	All Other Species	2,200	9.6	2,200
	TOTAL	16,500		17,500
District Totals	Smallmouth Bass	35,000	27.7	37,400
	Sheephead	14,900	11.8	16,400
	Yellow Perch	11,900	9.4	12,700
	Rock Bass & Crappie	10,600	8.4	11,300
	Bullhead	9,500	7.5	10,100
	White Bass	8,100	6.4	8,800
	Rainbow Trout	7,600	6.0	8,200
	Common Carp	5,400	4.3	5,800
	Coho Salmon	5,000	4.0	5,400
	All Other Species	18,600	14.7	18,800
	TOTAL	126,800		136,100

TABLE 3 CURRENT AND PROJECTED SPORT FISHING OCCASIONS PER YEAR TO 2000.*

LOCATION	TOTAL	LOCAL RESIDENTS	NON-LOCAL RESIDENTS	NON RESIDENTS
Lake Erie				
Current	63,000	47,800	4,900	10,400
Projected	66,700	49,100	5,600	12,000
Lake Ontario				
Current	18,600	13,800	3,800	1,000
Projected	19,700	14,200	4,400	1,100
Niagara River				
Current	54,300	29,000	6,200	19,300
Projected	58,900	29,800	7,100	22,000
Grand River				
Current	29,500	10,300	17,400	1,800
Projected	32,700	10,600	20,015	2,000
Other Inland Waters				
Current	14,200	10,300	900	3,000
Projected	15,100	10,600	1,000	3,500
District Totals				
Current	179,600	111,200	33,100	35,300
Projected	193,100	114,400	38,100	40,600

* Projected figures are based on current percentage of population who fish and population growth of 2.9% for district (from regional planning departments of Niagara and Haldimand-Norfolk) and 15% increase in non-local residents and non-residents (from July 1985 Draft Planning Manual).

TABLE 4 CURRENT AND PROJECTED COMMERCIAL FISH HARVEST NIAGARA DISTRICT WATERS

LOCATION	SPECIES	CURRENT HARVEST kg	PROJECTED HARVEST kg
Lake Erie	Yellow Perch	46,000	38,500*
	Rainbow Smelt	14,300	9,800*
	Pet Food and Discards	13,700	13,700
	White Bass	12,100	18,300*
	Yellow Pickerel	3,000	5,900*
	All Other Species	3,300	2,800
	TOTAL	92,500	89,000
Lake Ontario	Rainbow Smelt	11,400	11,400
	Yellow Perch	2,600	4,500*
	White Bass	1,000	1,000
	White Perch	500	500
	Sucker Species	400	400
	All Other Species	800	1,700
	TOTAL	16,600	19,100
Niagara River	Nil		
Other Inland Waters	Nil		
Grand River	Channel Catfish	4,600	6,200*
	Common Carp	4,500	9,100*
	Bullhead	1,600	7,600*
	White Perch	1,600	1,600
	Pet Food & Discards	1,300	1,300
	All Other Species	1,700	1,500
	TOTAL	15,400	27,300

..... Cont'd.

TABLE 4 Cont'd.

LOCATION	SPECIES	CURRENT HARVEST kg	PROJECTED HARVEST kg
Niagara District Totals	Yellow Perch	48,900	43,000
	Rainbow Smelt	25,700	21,200
	Pet Food & Discards	15,100	15,000
	White Bass	13,100	19,400
	Channel Catfish	4,700	6,300
	Common Carp	4,600	9,100
	Yellow Pickerel	3,100	5,900
	White Perch	2,800	2,900
	Bullhead	1,700	8,400
	Sheephead	1,400	1,500
	All Other Species	3,300	6,000
	TOTAL	124,500	135,400

* Catch limited by Quota. Column figures and totals differ due to rounding off.

TABLE 5 CURRENT AND PROJECTED ANNUAL BAITFISH HARVEST NIAGARA DISTRICT

LOCATION	CURRENT kg	PROJECTED kg
Lake Erie	7,600	7,600
Lake Ontario	200	200
Niagara River	105,900	105,900
Grand River	15,000	15,000
Other Inland Waters	15,400	15,400
TOTAL	144,100	144,100

TABLE 6 A COMPARISON OF THE 1983 DISTRICT LAND USE TARGETS, THE DEMAND FOR FISH, AND THE POTENTIAL FOR FISH PRODUCTION.

USE	LAND USE TARGETS	LAND USE TARGETS KG/YR	NEEDED TO MEET PROJECTED DEMAND KG/YR	RESOURCE BASE POTENTIAL KG/YR
Sport Fish	(326,000 Recreational Opportunities)	234,700	136,100	361,400
Commercial Fish		269,000	135,400	
Baitfish	(4.4×10^6 dozen)	144,000	144,000	171,800
TOTAL		647,700	415,500	533,200

TABLE 7 CURRENT TARGETS AND REVISIONS REQUIRED BY THREE OPTIONAL MANAGEMENT STRATEGIES.

OPTION	QUALIFIERS	TARGET ASSIGNED	WEIGHT OF FISH REQUIRED KG/YR
Current D.L.U.G. Targets	-insufficient	Sportfish 326,000 Angling Occasions Per Year At 0.72 kg Per Occasion	234,700
		Commercial Fish 269,000 kg/yr	269,000
		Baitfish 4.42 Million Dozen Per Year	144,000
		Total Fish Required	647,700
		Total Fish Available	533,200
Option 1	-Change D.L.U.G. targets to level of estimated demand.	Sportfish 193,100 Angling Per Year	136,100
		Commercial Fish 135,400 kg/yr	135,400
	-Maintain angling quality measure at 0.72 kg per occasion.	Baitfish 4.42 Million Dozen Per Year	144,000
		Total Fish Required	415,500
Option 2	-Change D.L.U.G. targets for for non bait fish to level of resource base potential.	Sport fish From 326,00 angling occasions at 0.52 kg/occasion each year to 233,900 angling occasions at current level of 0.72 kg/occasion each year.	168,400

TABLE 7 Cont'd.

OPTION	QUALIFIERS	TARGET ASSIGNED	WEIGHT OF FISH REQUIRED KG/YR
Option 2 Cont'd.	-No change in baitfish.	Commercial Fish 193,000 kg/yr	193,000
	-Allow angling quality to vary from present level and give a range for angling occasions.	Baitfish 4.42 Million Dozen Per Year	144,000
	-Maintain current ratio between landed weights for sport and commercial fishing.		
	-No increase in non bait fishing activity without reducing return per year.		
		Total Fish Required	505,400
Option 3	-Change D.L.U.G. targets for all fish to level of resource base potential.	Sportfish As Per Option 2	168,400
		Commercial Fish As Per Option 2	193,000
		Baitfish 5.27 Million Dozen Per Year	171,800
	-Allow angling quality to vary as in Option 2.		
	-Maintain current ratio for sport and commercial as in Option 2.		

TABLE 7 Cont'd.

LOCATION	QUALIFIERS	TARGET ASSIGNED	WEIGHT OF FISH REQUIRED KG/YR
Option 3 Cont'd.	-Allow no post 2000 increase in fishing activity without reducing return per user.	Total Fish Reequired	533,200

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